

Letters to the Editor: Comment and Reply

Comment: Efficient Information Visualization in LCA: Introduction and Overview

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Efficient Information Visualization in LCA: Introduction and Overview

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In the above noted article, the methodology for visualization is clear and can easily be understood. Nevertheless I asked myself whether this method can help to facilitate my approach and access to LC data.

Personally, first I like to see the absolute values and not the relative figures, at least usually. These absolute values I consider, in relation to the LCA frame, for global, regional, and local effects. Whether an item has a real impact can only be determined when this frame is known and respective experience is available. At this point, the question is whether the authors mean a relation to such limits with their relative presentations (often enough, however, truly exact data is not available) – or do they mean a relative comparison of global, regional, or local values? These possibilities to compare should be shown by examples. Personally, I do not accept comparisons or additions of inventories with different physical units (ecopoints). Regrettably, the authors do not say whether they mean such comparisons. The authors mention the possibility of the visualization of values in different life cycle phases. It would be interesting so see such functions by examples.

Though it would be desirable to know the uncertainty of LC data, often the knowledge of the variability of many data of an LC table is low. In my opinion, in the case of different uncertainties, the visualization would raise more uncertainty than a presentation in a table where one can see at a glance the different uncertainties from different sources.

The authors also mention the possibility to present the LC data for single phases of the life cycle. Where are the advantages in comparison to usual presentations? Please explain by example.

Moreover, all explanations in respect to the new way of visualization would have to be documented, for a considerably long time, in all future LCA publications in order to allow even the unexperienced reader to easily follow the text.

I hardly can see the advantage of this method in comparison with a table or a steeple diagram with LCA results. This article consists mainly in the mathematics of the spheroids; this could be placed in an annex. For me, the part in which the LCA reader could find the advantages, is too theoretical. My recommendation is that the authors take some complicated, real LCI tables to derive step by step which interpretations or main information can be carved out. What would the reader see at a glance from the spheroid and not so clear from a table?

In principle, I welcome the trials to use visualizations for simplifying a multitude of data. I admit that my ability for visualizations is limited. However, during this discussion there may be some other readers who can see more advantages in the procedure of using spheroids than me. It is my hope that my comments will be of any assistance.

Dr. Ferdinand Quella, München

Reply: Efficient Information Visualization in LCA: Introduction and Overview

In reply to the stimulating comments and interesting questions raised by Dr. Quella, we would first like to express our appreciation. We would also like to note that examples and further details of our work are given in subsequent papers (see p. 259–265 in this issue), which should clarify several points addressed in this discussion, and therefore are not addressed in detail in this reply. Several aspects regarding the implementation of a higher degree of interactivity of the user interface and details of multimedia aspects of the framework would be beyond the scope of this three-part series.

To clarify the complexity of the first part, it may be helpful to note that the article series on the visualization method is structured in three parts: 1. the fundamentals of the method with sufficient details on the geometric properties of glyphs are introduced in the first part [Int J LCA 8 (4) 183–189], 2. the structure of glyphs, data and context mapping and visualization scenarios with examples are discussed in the second part (see p. 259–265 in this issue), and 3. the structure and spatial properties of glyph matrices and spherical glyph clusters are presented and discussed, along with an example from the information technology industry, in the third part which is scheduled for the November issue.

In principle, the method is not limited to only representing either relative or absolute quantities. The framework is intrinsically as flexible as the application programmer and user requests. Representations of relative and absolute data quantities to the specific visualization scenarios are included in order to demonstrate just this point.

The 'all-in-one' comparison of different physical properties (e.g. ecopoints) can also be supported by the method; in principle, however,

the authors do not encourage this idea. Therefore, this was not elaborated further or explained by examples. On the contrary, the authors have developed this new visualization method to stick, as closely as possible, with the original LCI data, while providing a means to reduce the complexity and support the analysis of large amounts of data. Further details of visualizing the characteristic values related to different life cycle phases will be clarified in the third paper (November issue).

The accuracy of LCI data and its uncertainty is difficult to quantify. The method will not solve this underlying problem. However, a key feature of this visualization method is to efficiently represent data and its uncertainty, if available, no matter whether it is approximated, estimated or acquired from reliable sources. Hereby, an analyst can efficiently locate how and where uncertainty influences the overall result, so that the subject of focus remains the problem of the LCA itself. We do not decrease the complexity of the problem; only the effort required for understanding and interpreting the data representing the problem is reduced.

A disadvantage of every new concept and tool is that it requires a certain amount of learning capacity from the user at the beginning. However, the complexity of data mapping and computer graphics used should not mislead the reader to the false conclusion that the interpretation of the visualized data is complicated. On the contrary, we think that a picture says more than a thousand words or, in our case, a long table.

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